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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/502,057
Filing Date: October 28, 2004
Appellant(s): SCHULTES ET AL.

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FEB 22 2007
GROUP 1700

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Kirsten Grueneberg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/13/2006 appealing from the Office action mailed 5/10/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

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(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is substantially correct.

It is noted that the dependent claims are addressed under separate subheadings in the "Argument" section (page 3 of Appeal Brief); however, they are not summarized separately herein. Therefore the dependent claims are not considered to be separately grouped on Appeal.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

- 1) Claims 7 and 8 over Geck et al. and
- 2) Claims 8 and 16 over Mautner et al.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,981,659	Geck et al.	11/1999
5,223,586	Mautner et al.	6/1993

(9) Grounds of Rejection

For clarity, and as is evident from the record, the rejections over Geck et al. and Mautner et al. are stated together, but are in fact separate rejections. That is, each reference is considered individually in these rejections.

The following ground(s) of rejection are applicable to the appealed claims:

- 1) Claims 1, 2, 4 to 6 and 9 to 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geck et al.

Geck et al. teach silicone rubber graft copolymers. See for instance column 2, lines 45 and on. These copolymers are prepared from 5 to 95 wt% of a siloxane polymer core. This core fully meets the core a) in claim 1. Grafted onto this core is a (meth)acrylate shell. Column 4, lines 25 and on, teaches incorporating unsaturated groups into the core so the subsequent graft polymerization results in a core-shell covalent bond. Column 4, line 30 and on, specifically teaches a mixture of methyl methacrylate and butyl acrylate monomers; lines 48 to 55 disclose that this is a most preferred shell. Note that the layer b) in the claims is optional.

This graft copolymer is added to binders. The top of column 5 specifically teaches acrylate and methacrylate resins.

Thus, Geck et al. differ from that claimed only in that patentees do not teach or show a weight ratio of methyl methacrylate and butyl acrylate monomer (even though a mixture of the two is a most preferred embodiment). Example 3 shows a composition that meets every claim limitation in claim 1, except that the shell is a polymethyl methacrylate polymer (the other "most preferred" shell) rather than a copolymer having a ratio as claimed.

It is the Examiner's position that one having ordinary skill in the art would have found the selection of a methyl methacrylate/butyl acrylate weight ratio within the claimed range to have been obvious. For instance, since a mixture of both monomers is a preferred embodiment, the skilled artisan would have found the selection of a 50/50 wt.

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ratio as an obvious starting point for the shell copolymers in Geck et al. because this incorporates equal amounts of both necessary monomers. Such an obvious starting point falls within the claimed range. From this starting point, it would have been obvious to use greater amounts of methyl methacrylate in an effort to determine the optimum amount of this monomer. As can be seen from column 4, line 30 and on, adjusting the amount of these two monomers makes it possible to establish specifically the softening temperature of the polymer shell and thereby to match it exactly to the requirements during processing.

When the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (does not require undue experimentation). Thus determining the optimum or workable weight ratio of the two monomers in Geck et al. would have been obvious. Similarly, discovering an optimum value of a result effective variable involves only routine skill in the art. Since the amount of each monomer affects the final softening temperature of the copolymer, the amount of each will correspond to a result effective variable and the determination of an operable or optimum amount would have involved only routine skill in the art.

In this manner, the only difference between the claimed material and the prior art material is rendered obvious.

For claim 2, see column 4, lines 57 to 59. The entire claimed range is within the range disclosed by Geck et al. Since the skilled artisan would have been motivated to select a core/shell weight amount within the range on column 4, lines 57-59, they would have found the selection of a weight within the claimed range to have been obvious.

For claim 4, see column 5, lines 5 to 10.

For claim 5, note that the graft copolymer is, in fact, an acrylate rubber impact modifier, since the outer layer thereof is an acrylate rubber. Thus this graft copolymer also meets the requirement of claim 5.

For claim 6, see column 3, line 21.

For claim 9, again see column 5, lines 7 and 8, in which the upper limits of 20 and 10 wt% of silicone graft copolymers fall within the claimed range. One having

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ordinary skill in the art would have found the selection, for instance, 10 or 20 wt% of silicone graft copolymer to have been obvious in the material of Geck et al.

For claim 10, again see column 3, line 21.

For claims 11 and 12, the butyl acrylate in Geck et al. meets these claims.

For claim 13, patentees fail to teach this vinyl group content. Example 1 has 5 mol % vinyl groups. Column 3, line 36, teaches that less than 30 mol% of such groups. As noted above, where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus the skilled artisan would have found the selection of from 2 to 3 mol% vinyl groups to have been obvious, particularly in view of the proximity of 3 mol% to 5 mol%, the content found in the working examples.

For claim 14, see column 6, line 10, which specifically teaches impact resistance. Also note that the silicone graft copolymers are mixed with the desired thermoplastic and extruded to form a powder. See column 5, lines 10 to 16, lines 22 to 30 and Example 3. This resulting powder can be considered a molding as it is obtained by molding process within the breadth of this claim.

For claim 15, such properties would appear to be inherently present in the prior art composition since, with the exception of the recited amount of each monomer in the copolymer shell, the compositions are the same. The amount of each monomer will affect the softening temperature of the polymer shell and thus it does not appear that this slight difference will affect these inherent properties of the prior art compositions.

For claim 16, see column 5, lines 50 to 58.

2) Claims 1, 2, 4 to 7 and 9 to 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mautner et al.

Mautner et al. teach graft copolymers having core/shell structure. See column 2, lines 40 and on, which teaches a polysiloxane core meeting a) in claim 1. This graft copolymer can have a layer b) as claimed. The shell of the copolymer is disclosed on column 3, line 58 and on. Particularly note Example 3, in which a combination of butyl acrylate and methyl methacrylate is used to form a copolymer shell on a polysiloxane

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core that meets a) as claimed. This core even contains vinyl groups, as required by the claims. The graft copolymers are added to various thermoplastics including polymethyl methacrylate (column 10, lines 22 and on). This reference also from that claimed in that it does not teach an amount of butyl acrylate to methyl methacrylate as claimed.

As noted above, adjusting the amount in the copolymer shell of each component, such as methyl methacrylate and butyl acrylate, such that the resulting copolymer shell will have desired or optimum properties would have been well within the skill of the ordinary artisan. For instance, in Example 3, adjusting the amount of each butyl acrylate and methyl methacrylate in the shell in an effort to determine operable and/or optimum amounts of each component would have been well within the skill of the ordinary artisan. On the other hand, Mautner et al. prepare shells that contain only methyl methacrylate. The addition of butyl acrylate, taught by Mautner et al. to be a useful monomer in making shell copolymers, to these shells would have been obvious to the skilled artisan in an effort to obtain the different properties associated with this monomer.

In this manner the skilled artisan would have found compositions falling within the breadth of instant claim 1 to have been obvious.

For claim 2, please see column 6, line 20, which teaches a copolymer having 30 wt% of the organic shell. This specifically disclosed limit renders obvious the selection of such an amount and thus renders obvious claim 2.

For claim 4, note that the examples on column 11 use an amount of graft copolymer falling within this range.

For claim 5, again note that the silicone graft copolymer having acrylate rubber shells meets this claim. For claim 6, see the top of column 4.

For claim 7, of the four specific thermoplastics taught on column 10, Mautner et al. include both polymethyl methacrylate and styrene-acrylonitrile polymers. It is prima facie obvious to substitute equivalents, motivated by the reasonable expectation that the respective species will behave in a comparable manner or give comparable results in comparable circumstances. It is also prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. With this in mind, one

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having ordinary skill in the art would have found a thermoplastic composition containing both polymethyl methacrylate and styrene-acrylonitrile polymers to have been obvious, particularly in view of the very limited number of thermoplastics disclosed by Mautner et al. The teachings of Mautner et al. indicate that the polymers therein are useful in forming thermoplastics having improved impact resistance and combining two thermoplastics having desirable impact strength to form another would have been obvious to the skilled artisan.

For claim 9, again note the working examples which include an amount of graft copolymer and polymethyl methacrylate meeting that claimed.

For claim 10, see column 4, line 2.

For claims 11 and 12, note that Example 3 uses butyl acrylate.

For claim 13, column 3, line 52, teaches less than 30 mol% of vinyl groups. Again adjusting the amount of vinyl groups in an effort to determine the operable and/or useful amount would have been well within the skill of the ordinary artisan, thus rendering obvious the claimed amount.

For claim 14, please see columns 10 and 11, which show improved impact strength for thermoplastic compositions.

The Examiner relies on the rationale noted supra for claim 15.

3) Claims 1, 2 and 4 to 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 18 to 25 of copending Application No. 10/501,467. Although the conflicting claims are not identical, they are not patentably distinct from each other because the silicone rubber graft copolymer in '467 embraces silicone graft copolymers in which the shell is obtained from a mixture of acrylic esters and methacrylates. See for instance the silicone graft copolymer in claims 11 and 12 of '467. Adjusting the amount of each component in the shell would have been well within the skill of the ordinary artisan (note the position of obviousness addressed supra). Claims 18 to 25 are drawn to an impact resistant molding material which contains such a silicone graft copolymer and poly(meth)acryl-

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ates, as well as styrene-acrylonitrile polymers meeting claims 7 and 8. In this manner the instant claims are embraced by the claims in '467.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

(10) Response to Argument

Appellants' traversal of these rejections is not persuasive.

Applicants state that Geck et al. and Mautner et al. fail to disclose or suggest an impact resistant molding material comprising PMMA and a silicone rubber graft copolymer as claimed. While the Examiner agrees that the references don't disclose such a material (since this would result in an anticipation rather than obviousness rejection) she does believe that the references suggest such a material. That is the basis for the obviousness rejections.

With regard to Geck et al., the fact that Geck et al. teach using the final products as powder coatings rather than as a molding material only reflects the future intended use of the composition. Patentees do not have to teach the same future intended use of the composition. On the other hand, as noted in the rejection above, Geck et al. extrude a mixture of the silicone rubber graft copolymer and polymethyl methacrylate through a die before making a powder coating. See also column 5, lines 27 to 30. This will result in a molded material.

The only other traversal specifically supplied by appellants relates to the claimed acrylic ester to methacrylate ratio. Appellants are of the position that materials having particles within the claimed range exhibit improved notched impact strength. To support this, appellants rely upon the data found in the specification and supplied in the Appeal Brief. For various reasons, these examples fail to establish a criticality in this ratio.

On one hand, these examples are not representative of the breadth of the claims. The claims embrace a very broad ratio of the two comonomers in the shell while the examples only show a few specific ratios. Also the claims allow for a large range in the amount of graft copolymer in the final material while the examples only show a limited,

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specific amount. Such a limited showing within the breadth of the claims cannot be considered representative of the claimed invention.

Also, all of the inventive examples use a combination of ethyl acrylate and methyl methacrylate while the claims are much broader. Note for instance that both prior art references show combinations of butyl acrylate and methyl methacrylate. It is difficult to compare such results with the prior art and applicants have not provided data, or even arguments, that results for ethyl acrylate can be extrapolated to butyl acrylate.

In addition to that fact that the inventive examples are not representative of the breadth of the claims, appellants' comparative examples also are not helpful. Both comparative examples show polymethyl methacrylate homopolymer shell while the prior art shows or teaches butyl acrylate and methyl methacrylate copolymers. Appellants cannot rely on a comparison with a homopolymer to establish criticality for a copolymer ratio. In fact, the prior art teachings are closer to the claims than the comparative examples provided. There is nothing in these examples that shows a criticality within the claimed range of acrylic ester and methacrylate.

While appellants are not required to test each and every species within the scope of the claims, patentability is established by a showing of unexpected superiority for representative compounds within that scope. Appellants have not provided a representative showing. The unobviousness of a broader claimed range can, in certain instances, be proven by a narrower range of data, if one of ordinary skill in the art would have been able to ascertain a trend in the exemplified data which would allow one to reasonably extend the probative value thereof. In the instant application, appellants have not established unobviousness for any range, nor can any of the results be extrapolated to the extent necessary. The burden of demonstrating that a showing is reasonably commensurate rests with appellants, not the examiner.

Appellants simply have failed to establish any criticality for the claimed ratio.

In summary, both references teach materials that differ from the material of claim 1 only in that the references do not show a ratio of acrylic ester to methacrylate as claimed. The Examiner has established the obviousness of selecting a ratio with the claimed range. The burden thus shifts to appellants to establish unobviousness. To do

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so appellants try to rely upon their working examples, allegedly for establishing the criticality of the claimed ratio. These examples simply are not sufficient to establish any criticality in the selection of a copolymer having monomer ratio within the claimed range.

Finally, regarding the dependent claims, it is noted that no specific separate arguments are made for the limitations therein. In view of this, and that noted in section (5), supra, the obviousness of these claims is maintained as well.

For the obviousness-type double patenting rejection, appellants request that it be withdrawn if it is the only issue remaining in the case. This is not the case and as such it is maintained. The Examiner notes that such a traversal indicates that appellants' acquiesce the basis for this rejection.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

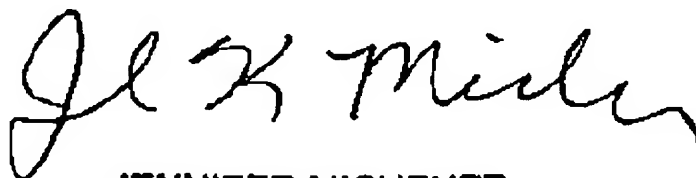
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